FRBSF WEEKLY LETTER

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Interest Sensitivity of MMDAs

The money market deposit account (MMDA) is the first liquid short-term small-denomination deposit account in recent history to be free from interest rate ceilings. The account has been very successful, with balances currently over $460 billion nationally. Designed to compete with the money funds, the MMDA succeeded in attracting an estimated $90 billion from them during its first 3 months and also drew funds from banks' and thrifts' large and small time deposits.

Since the MMDA attracted funds from interest-sensitive sources such as the money funds and large time deposits, one might expect MMDA balances to be interest-sensitive. One of the major uncertainties surrounding the MMDA's introduction was just how sensitive it would be to interest rate differentials. If MMDA balances were highly interest-sensitive, banks could attract deposit inflows with marginally higher interest rates. This would mean that MMDA deposits would have rates that behaved like rates on certificates of deposit (CDs), money funds, or other open-market-return instruments, and most likely that the level of MMDA rates would be close to those on open-market instruments as well. If this were true, MMDAs would be a relatively costly source of deposits.

If, instead, MMDAs were relatively interest rate insensitive, then depositors would be less likely to shift their funds from bank to bank or out of the banking sector unless they received large or lasting rate differences. To the extent that the comparative advantage of banks is in providing financial intermediation services at the retail level, banks could benefit by having a stable new source of retail funds whose cost was likely to be not only less than wholesale deposits but much less variable as well.

In this *Letter*, we summarize the results of our study of these issues, which appears in the Spring 1985 *Economic Review* of the FRBSF. Our empirical analysis uses monthly data on the rates and quantities of deposits in MMDAs and other accounts for a sample of 59 banks in the Twelfth Federal Reserve District. Data for individual banks, unlike aggregate data, enable us to address questions of interbank competition.

Sluggish response of retail deposits

Retail deposits at banks respond sluggishly, or incompletely, to interest rate differentials with other banks or with wholesale interest rates (e.g., those on Treasury bills). That is, a bank will not lose its retail core deposits instantaneously if it pays slightly less than the prevailing market rate. In a perfectly competitive market without adjustment costs, depositors would be expected to withdraw funds immediately from institutions offering below market rates of return. Large wholesale deposits, such as negotiable CDs, which are traded in a national market and therefore are very sensitive to interest rate differentials, do behave in this manner, but retail deposits apparently do not.

One explanation for the sluggish interest-rate responsiveness of retail deposits is that depositors incur transaction and information costs when opening new accounts. In practice, it would be worthwhile for depositors to switch accounts only if the expected gain from switching banks exceeds the cost of doing so. The transaction and information costs of opening a new account include the time costs required to learn about a bank's rates, services, location and procedures, and to fill out the forms required to open an account. Yet, for the individual depositor, these "investment" costs of opening an account must be incurred again if he switches to another bank or nonbank investment alternative.

The relative importance of these costs likely diminishes as account size increases since many of them do not vary with respect to account size. We therefore would expect those retail accounts with the smallest balances to be the least interest-sensitive. Since personal MMDA balances average around $15,000, we would expect them to be insensitive compared to larger accounts.

Flannery has shown that banks pay for part of these "adjustment" costs depositors face. By sharing these costs, both banks and depositors will have incentives to minimize shifting among banks because they would want to minimize the costs associated with such shifts. Thus, retail deposits, particularly small deposits, respond sluggishly or incompletely to temporary interest rate fluctuations.

The adoption of MMDAs

In previous *Letters*, we have argued that MMDAs lowered deposit costs for banks while increasing returns for depositors. Interest ceilings had led banks to substitute underpriced or nonpriced services for interest payments and also to substitute wholesale deposits for retail deposits. Both of these responses to ceilings were more costly than direct interest rate competition would have been. Thus, the MMDA, by allowing banks to attract funds directly through price competition, was akin to a new cost-saving technology.

But even when a new cost-saving technology such as the MMDA is introduced, the adoption of that technology will not be instantaneous. The costs of learning about the new technology as well as the costs involved in actually adopting it can take time and be relatively expensive. Thus, the rate of adoption of a new technology depends on the cost-savings it promises compared to the informational and other adjustment costs involved in adopting it.

Banks apparently expected substantial long-run cost savings by attracting funds into MMDAs because most institutions offered them immediately and many institutions waged aggressive advertising and promotional pricing campaigns. Although depositors responded rapidly to the above-market promotional rates on the new account, our analysis of the pattern of adoption of MMDAs for banks in the western states indicates that, on average, depositors took a little more than three months to reallocate their portfolios. (See the chart which shows it took at least three months for MMDA deposit levels to stabilize.)

Some depositors may have delayed reallocating their portfolios because they were waiting for time deposits to mature before shifting them into MMDAs. However, this cannot fully explain why adjustment was not more rapid. Transfers from money funds, for example, can be accomplished simply by writing a check, yet the period of run-offs from the money funds was about the same length as that for time deposits. This suggests that opening new MMDA accounts must have involved significant adjustment costs.

Pricing pattern

The adjustment-cost hypothesis predicts that the pricing of a new, lower cost retail account such as the MMDA would have the following pattern: Premium interest rates would be offered during the introductory period, followed by a reduction in rates to below-market levels as inflows tapered off. Also, we expected MMDA rates to be much less variable than wholesale rates after portfolios were reallocated because of significant adjustment costs.

We expected banks to offer premium rates initially to depositors to compensate them partially for the costs of transferring assets into new MMDA accounts. Compensation was necessary because, unlike existing accounts where deposits can be added relatively costlessly, almost all additions to MMDAs during the introductory months were to new accounts. But after the adjustment phase was completed, premium rates would serve only to drive up MMDA deposit costs without attracting a significant volume of new accounts because such premiums would have to be paid on existing as well as new accounts. Banks would then have to use other methods, such as bonuses, to compensate persons opening new MMDA accounts.

We expected MMDA rates to be below open-market rates after portfolios were largely reallocated because of additional MMDA features such as federal deposit insurance, ATM access, and banks' cost of providing retail account services.

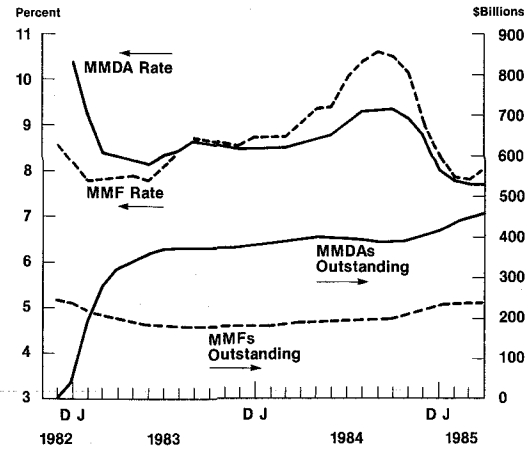
In the chart, we plot the average rates paid on MMDAs and money funds over time. The chart shows that, as expected, the MMDA rate was considerably higher than the money fund rate during the initial period of rapid deposit inflows, but that the rates were close by March of 1983 when deposit levels had stabilized. Also, following the adjustment period, there was considerably less variation in the MMDA rate than in the money fund rate. The behavior of MMDA interest rates therefore indicates that banks are pricing these accounts as retail deposits rather than as wholesale funds.

In the months following the introductory period, MMDAs proved to be a stable source of deposits despite long periods when wide rate differentials favored money market funds (see chart). At the national level, MMDA growth stagnated over this period, but there was not the major shift out of MMDAs that would have resulted if MMDAs were as interest-sensitive as wholesale deposits.

Introductory period

To estimate just how sensitive MMDAs were to interest rate changes, we performed a statistical

MMDAs vs. Money Market Funds (MMFs)



analysis on our sample of 59 western banks of the relationship between a bank's MMDA deposits, its MMDA rate, and the average rate offered by the money funds. We first examined the three-month introductory period of rapid MMDA inflows.

During the introductory period, we found a rapid reallocation of portfolios to include substantial MMDA deposits. Moreover, MMDA accounts were initially very interest-sensitive. In December, for example, banks with 1 percent higher MMDA rates (on average, about 10 basis points) attracted over 3 percent more MMDA deposits. Our analysis of the pattern of MMDA inflows for individual banks indicates that higher introductory rates accelerated the adjustment of MMDA deposits to their "equilibrium" level for individual banks, although they had little impact on institutions' long-run level of MMDAs relative to total deposits.

Post-introductory period

During the post-introductory period, MMDAs exhibited much less short-run interest sensitivity and behaved more like other retail deposits. Once the initial rapid growth subsided, adjustment to a change in rates took much longer, with the estimated long-run interest sensitivity over 30 times the short-run (one-month) elasticity.

Once new accounts were established, there were relatively few adjustments in the quantity of funds in the accounts. Indeed, banks also made efforts to retain these funds by linking them to other services and products, thereby increasing their overall convenience to depositors. This added convenience, however, increased the cost (inconvenience) of closing an account.

Consistent with a much slower adjustment, our findings also indicate much less short-run interest rate sensitivity after February 1983. For example, in the post-introductory period, MMDAs were only 1/15 as interest-sensitive in the short-run as during December 1982. However, even during the post-introductory period, the accounts were still sensitive in the long-run to interest rate differentials. Thus, a bank's long-run percentage of MMDAs in total deposits depended on the average rate paid over a longer period.

Competition from the money funds

Our results also suggest that money funds provided important competition to MMDAs. We found a statistically significant, but small, short-run relationship between MMDA deposits and rates paid on money funds, confirming that these two accounts are substitutes. That is, when money funds' rates rose relative to MMDA rates, MMDA deposits declined. This finding is consistent with the sizable initial shift of funds from the money funds into MMDA and also with the stagnation of MMDA deposit growth that occurred when money funds' rates substantially exceeded MMDA rates during the summer of 1984. Still, in the long-run, MMDA deposits are sensitive to money fund rates. This suggests that while large differences in the two rates can exist temporarily, a persistent differential ultimately will cause a significant shifting of funds.

Conclusions

MMDA deposits were interest-sensitive (even in the short-run) during their initial promotional period when funds were shifted rapidly into them. However, once depositors reallocated their portfolios, the speed of adjustment to changes in rates was much slower. Consequently, MMDA balances were less responsive to interest rates in the short-run than they had been initially. This pattern of growth in MMDA deposits is consistent with the existence of significant costs in opening new accounts. Once accounts were opened, these costs ensured that depositors would shift their funds only slowly in response to interest differentials. While money funds and MMDAs are substitutes, they are not as close substitutes as some had anticipated, at least in the short-run. Thus, MMDAs appear to be a stable source of deposits, much like other retail or "core" deposits. They are unlike wholesale funds, which are very interest-sensitive, both in the short- and long-run.

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Opinions expressed in this newsletter do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco, or of the Board of Governors of the Federal Reserve System.
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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 6/5/85	Change from 5/29/85	Change from 6/6/84 Dollar	Change from 6/6/84 Percent[7]
Loans, Leases and Investments[1] [2]	191,365	322	11,204	6.2
Loans and Leases[1] [6]	172,972	305	11,900	7.3
Commercial and Industrial	51,995	− 133	2,642	5.3
Real estate	62,999	9	2,749	4.5
Loans to Individuals	34,223	83	6,168	21.9
Leases	5,363	1	354	7.0
U.S. Treasury and Agency Securities[2]	11,442	44	− 540	− 4.5
Other Securities[2]	6,951	− 27	− 156	− 4.1
Total Deposits	198,069	3,550	8,316	4.3
Demand Deposits	47,904	2,361	2,289	5.0
Demand Deposits Adjusted[3]	30,798	2,086	408	1.3
Other Transaction Balances[4]	13,921	835	1,113	8.6
Total Non-Transaction Balances[6]	136,245	356	4,913	3.7
Money Market Deposit Accounts—Total	43,995	455	4,676	11.8
Time Deposits in Amounts of $100,000 or more	38,290	− 154	− 1,133	− 2.8
Other Liabilities for Borrowed Money[5]	22,953	790	3,293	16.7

Two Week Averages of Daily Figures	Period ended 6/3/85	Period ended 5/20/85
Reserve Position, All Reporting Banks		
Excess Reserves (+)/Deficiency (−)	− 3	65
Borrowings	32	52
Net free reserves (+)/Net borrowed(−)	− 35	13

[1] Includes loss reserves, unearned income, excludes interbank loans
[2] Excludes trading account securities
[3] Excludes U.S. government and depository institution deposits and cash items
[4] ATS, NOW, Super NOW and savings accounts with telephone transfers
[5] Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources
[6] Includes items not shown separately
[7] Annualized percent change